

STATEMENT OF REGIONAL NEED

Conexus Indiana maintains that "Manufacturing is the foundation of Indiana's economy. And it's an industry poised for growth even in today's challenging economic environment. Today's manufacturing industry isn't dominated by assembly line workers and forklift operators. Manufacturing is high-tech. It's driven by innovation. It's high-paying and cutting-edge. And, in Indiana, it employs one of every five Hoosiers and makes up one-third of the state's economy."

Furthermore, "The long-term view of the manufacturing industry remains optimistic despite recent economic challenges. Overall, the manufacturing and logistics industries are very healthy. In the 2012 Manufacturing and Logistics Report Card, Indiana scored an A in both Manufacturing and Logistics Industry Health."

Employment and Earnings for Indiana Region 4 Workforce (U.S. Bureau for Economic Analysis) indicate that manufacturing leads the Region with number employed (45,477 . . . 17.9%); earnings with over \$3.3 billion (29.4% of the Regions earnings); and highest average earnings per job at \$73,961. The paradox is while the Region 4 Manufacturing Economic Data is robust; the current and long range forecast of available qualified workforce for Region 4 Manufacturing sector is weak. A recent study by the National Association of Manufacturers (NAM) shows that 80 percent of manufacturers cite "finding qualified workers" as a top concern. Region 4 Board Members representing manufacturing reiterate this concern. With the recent advent of the need of a highly technical trained workforce and the beginning the 'baby boomer generation' retirement, manufacturing in Region 4 is faced with some steep challenges related to business operations. Exacerbating the issue is the stubbornly poor perception of manufacturing jobs among younger workers. Our recent public opinion survey on manufacturing found that among 18-24 year-olds, manufacturing ranks dead last among industries in which they would choose to start their careers (Manufacturing Institute, *Boiling Point*, 2011). At a time when manufacturing is on an economic rebound, the current skills shortage negatively impacts critical functions like new product development, implementation of new technologies, or attaining productivity targets.

The gaps existing in the Workforce Region 4 that this project will address include but not limited to the following:

- I. **Educator Training and Development: Need to prepare human capital**
 - a. Sources: The National Science Foundation Report, May 2010; Carnegie Cooperation, 2014.
 - b. For America's students to gain the skills and knowledge necessary to be full participants in our economy and democracy, an effective teacher is needed for every child. Reaching this goal requires a whole new way of managing the people side of the education system: recruiting and preparing excellent teachers and principals, developing them throughout their careers so that they and their students continue to improve, and managing talent to ensure that the students have the teachers best-equipped to guide them along their educational path.
 - c. Need for specialized training of teachers: Support rigorous, research-based STEM and Advanced Manufacturing preparation for teachers, particularly general education teachers, who have the most contact with students at young ages. Attention should be given to training teachers in the most effective methods of teaching STEM and Advanced Manufacturing content, including hands-on and unstructured problem solving and inquiry-based learning. Encourage pre-service education and professional development for education professionals (including teachers, principals, and counselors) in the area of STEM and Advanced Manufacturing talent identification and development. Teacher training and

professional development must rely on the best available research in these areas and should be aligned with evidence of improvements in student identification and outcomes.

- d. Encourage the creation of positive school environments that foster excellence by providing professional development opportunities for teachers, principals, counselors, and other key school staff.
 - i. For teachers, provide professional development in STEM and Advanced Manufacturing instructional practices shown to improve achievement, creativity, and motivation among talented students.
 - ii. For principals and other administrators, provide professional development opportunities aimed at strengthening the leadership skills necessary to cultivate a supportive learning ecosystem for both teachers and *all* students.
 - iii. For counselors and other key school staff, provide professional development aimed at understanding the educational needs of talented students from diverse backgrounds and with diverse interests.
- e. Attention should be given to professional development aimed at transforming negative attitudes and mindsets of educators and students regarding their perception of Advanced Manufacturing.

II. Need for specialized training of students

- a. Source: Conexus IN; US Dep. of Ed Redesigning America's High Schools, 2013
- b. In today's economy, education is the passport to success - but it doesn't necessarily have to be a four-year degree. Half of all U.S. jobs today can be defined as 'middle skill' - requiring a two-year associate's degree or some post-high school technical training. Over the next five years, one of every two new jobs will continue to fall into this category.
- c. In Indiana, many of these jobs are in advanced manufacturing and logistics. In today's high-tech facilities, it's not about standing at an assembly line all day - it's working with the latest technologies at some of the most innovative companies in the world.
- d. These are fast-paced, engaging careers that require the critical thinking and analytical skills gained through specialized training. Because perceptions are stuck in the past, students and workers are not exploring the advanced manufacturing and logistics careers of the future.
- e. Today's global economy requires new approaches to teaching and learning in America's high schools to foster problem solving and analysis, to support creativity and collaboration, and to connect student learning directly to the real world.
- f. Students learn best when they are engaged in complex projects and tasks aligned with their interests and when they work with others through practical examples and case studies that engage them in rigorous academics and in the application of knowledge.

III. Spark interest early in students and parents

- a. Source: US News & World Report, 2014; Simulation Tech Group, 2013;
- b. While 70 percent of Americans view it as the most important industry for a strong economy and national defense, only 30 percent of parents encourage their children to pursue a manufacturing career.
- c. The word "manufacturing" still conjures up in some minds the image of an untidy factory floor full of dirty, dangerous and repetitive jobs.

- d. Many manufacturing facilities in the United States today are cleaner than most offices or doctors' office waiting rooms. They are gleaming showrooms of the latest technologies. And they are staffed by highly-skilled and well-educated professionals producing the most exciting breakthroughs of our time, such as advances in robotics, automation and 3D printing.
- e. There is also a huge and growing demand by U.S. manufacturers for skilled production workers, engineers and technicians. The resurgence in U.S. manufacturing since 2010 has already led to more than 600,000 additional jobs. The National Association of Manufacturers estimates that more than two-thirds of their sector's current skilled workforce will have retired by 2030.
- f. Students need to learn about science, technology, engineering, and math (STEM) from the beginning. They need to have a basic understanding and meet a minimum level of knowledge to feel competent and confident to move forward with STEM studies in high school.
- g. Create strong partnerships between organizations, business and exemplary schools to provide a comprehensive community-based approach to advance manufacturing.

IV. Rebrand manufacturing

- a. Source: ACT, *Developing the STEM Education Pipeline*, 2006; Technician Online, *Alumni represent, rebrand manufacturing*, 2013 McKinsey Global Institute, *Manufacturing the future: The next era of global growth and innovation*, ;
- b. Include parents, teachers, and counselors in outreach programs that help them learn about Advanced Manufacturing professions so they can encourage students to go into those fields.
- c. Focus educational programming for students on the resurgence manufacturing landscape.
- d. Communicate to student and parents that 'Manufacturing's role is changing. The way it contributes to the economy shifts as nations mature: in today's advanced economies, manufacturing promotes innovation, productivity, and trade more than growth and employment. In these countries, manufacturing also has begun to consume more services and to rely more heavily on them to operate.'
- e. Communicate to student and parents that Manufacturing is not monolithic. It is a diverse sector with distinct groups of industries, each with specific drivers of success.'
- f. Communicate to student and parents that 'Manufacturing is entering a dynamic new phase. As a new global consuming class emerges in developing nations, and innovations spark additional demand, global manufacturers will have substantial new opportunities—but in a much more uncertain environment.'

PROJECT DESCRIPTION, PERFORMANCE MEASURES, EVALUATION, SUSTAINABILITY

- I. The Career and Technical Education (CTE) Awareness **Initiatives** for Work Council Region 4 will focus on two primary areas which are:
 - a. Educator Enrichment in the Areas of Advanced Manufacturing and/or STEM education, to include but not be limited to:
 - i. Develop Professional Development for Instructors and Counselors by an educational institution or Manufacturing Company.
 - ii. Scholarships for educators to attend Professional Development programs that focus on Advanced Manufacturing or STEM.
 - iii. Educator tours of Advanced Manufacturing facilities

- iv. Shadowing/mentoring experiences for educators at Advanced Manufacturing facilities
- b. Support for summer or winter Break educational enrichment programs focused on Advanced Manufacturing or STEM supported by Region educational institutions or Advanced Manufacturing Companies, to include but not be limited to:
 - i. Program fees (curriculum, equipment, speakers, facilities, refreshments/meals)
 - ii. Scholarships to attend educational programs focused on Advanced Manufacturing or STEM.
- c. Promotion of Advanced Manufacturing Companies and CTE programs focused on Advanced Manufacturing or STEM related careers, to include but not be limited to:
 - i. Promotional Material, refreshments, speakers

II. **Primary outcomes** that this project aims to achieve?

- a. Engage students in 'non-school' educational activities.
 - i. Obama/Biden's position paper entitled "Plan for Lifetime Success through Education" recommends expanding summer earning opportunities as a way to narrow the achievement gap. In light of these recent calls for action, identifying effective and promising summer learning approaches for students is imperative.
 - ii. Studies strongly suggest that good summer learning programs can improve the educational outcomes of students.
- b. Enhance Region 4 educator's competencies in the area of Advanced Manufacturing and/or STEM so these educators can develop sound, comprehensive, thorough educational lessons for their students.
- c. Develop a better understanding of Advanced Manufacturing for students, parents, and the general public enhancing their knowledge and appreciation for the Advanced Manufacturing Industry and/or career.

III. **Partners and Role**

- a. Region 4 Educational Institutions
 - i. Promote to educators and students
 - ii. Design/develop in-service education
 - iii. Design/develop 'non-school' educational experiences
- b. Region 4 Advanced Manufacturing Companies
 - i. Promote to educators and students
 - ii. Design/develop in-service education
 - iii. Design/develop 'non-school' educational experiences
 - iv. Provide facility for open house, educator job shadowing, and/or 'non-school' educational experiences

IV. **Grant proposal timeline.**

- a. March 26, 2014 Submission of Grant
- b. April 2014 Announcement of Grant Recipient
- c. May 1, 2014 Set up Proposal Review Committee for Region 4
- d. May 5, 2014 Announcement of RFP to eligible organizations in Region 4
- e. May 15, 2014 Receive RFP
- f. May 15, 2014 Review RFP by Proposal Review Committee for Region 4
- g. May 20, 2014 Announcement of funding for RFP as reviewed
- h. May 15, 2015 Last Day to submit RFP

- i. June 30, 2015 Final RFP reports due
- j. July 31, 2015 Submission of Final Report to Center for Career Innovation

V. Major deliverable

- a. Name, description and review of Educator in-service programs
- b. Report of implementation of programs by educators
- c. Number of student enrolled in Advanced Manufacturing program
 - i. Percent Increase or decrease from prior year
- d. Name, description and review of student 'non-school' educational programs
- e. Date and Number of attendees of Advanced Manufacturing open house or tours
- f. Decreases in number of Advanced Manufacturing turnover in first 30 day of employment

VI. Outcome based measures

- a. Percent change in Advance Manufacturing / STEM educators in Region 4
- b. Percent Change in educators attending in-service training in the Advance Manufacturing / STEM programs
- c. Percent Change in the number of Manufacturing/STEM programs offered in Region 4
- d. Number of students enrolling in pre or post High School Advanced Manufacturing course of study
- e. Student evaluation of 'non-school' based programs
- f. Change in perception and attitude by public in regards to Advanced Manufacturing

VII. Substantive evaluation and sustainability plan

Each RFP that receives funding will be required to evaluate and report of the event, workshop, and educational program. Goals and objectives of the RFP will be required with outcome based measures applied to the objective. Follow up evaluations (6-9 mos) will be encouraged as well as antidotal feedback. The success of the programs will be in the change in knowledge, attitudes, skills and aspirations of students, parents, educators and the public.

Sustainability of the programs into 2015 and 2016 will depend largely on the success of the RFP programs. Data gleaned from the evaluations will be used to garner support for successful programs for industry, government (EDIT funds) and school boards. The data will also be useful in preparing RFP for grants for public and private sources.

Grant Administrator

Region 4 Workforce Director Roger Feldhaus will administer the grant on behalf of the Region 4 Workforce Committee. Region 4 Workforce Committee will set up a Grants Committee consisting of 4 voting members and the Region 4 Workforce Committee Chairperson who will break any tie votes. Meetings of the Grants committee can convene via electronic mail to expedite the RFP.